

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 April 2005 (21.04.2005)

PCT

(10) International Publication Number
WO 2005/036222 A1

(51) International Patent Classification⁷: G02B 6/12, 6/16

(21) International Application Number:
PCT/GB2004/004268

(22) International Filing Date: 8 October 2004 (08.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0323807.8 10 October 2003 (10.10.2003) GB

(71) Applicant (for all designated States except US): UNI-
VERSITY OF SOUTHAMPTON [GB/GB]; Highfield,
Southampton SO17 1BJ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SAZIO, Pier, John,
Anthony [GB/GB]; Centre for Enterprise & Innovation,

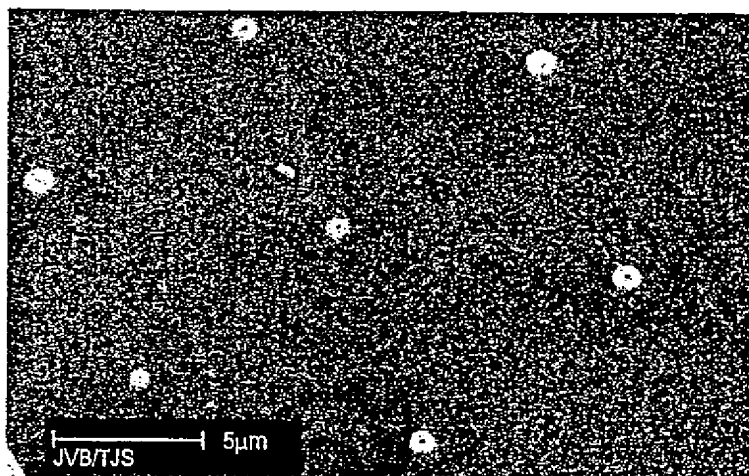
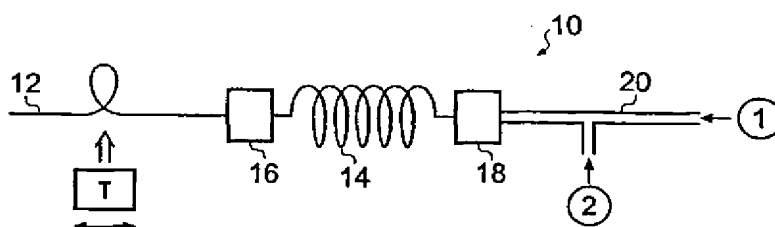
University of Southampton, Highfield, Southampton SO17
1BJ (GB). BADDING, John, Victor [US/GB]; Centre
for Enterprise & Innovation, University of Southampton,
Highfield, Southampton SO17 1BJ (GB). HEWAK,
Daniel, William [CA/GB]; Centre for Enterprise &
Innovation, University Of Southampton, Highfield,
Southampton SO17 1BJ (GB). HOWDLE, Steven,
Melvyn [GB/GB]; Centre for Enterprise & Innovation,
University Of Southampton, Highfield, Southampton
SO17 1BJ (GB).

(74) Agents: ROBINSON, Nigel, Alexander, Julian et al.; D.
Young & Co., 120 Holborn, London EC1N 2DY (GB).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,

[Continued on next page]

(54) Title: FABRICATION OF METAMATERIALS



(57) Abstract: A method of fabricating a metamaterial is provided, comprising providing a sample of engineered microstructured material that is transparent to electromagnetic radiation and comprises one or more voids, passing through the voids a high pressure fluid comprising a functional material carried in a carrier fluid, and causing the functional material to deposit or otherwise integrate into the engineered microstructured material to form the metamaterial. Many microstructured materials and functional materials can be used, together with various techniques for controlling the location of the integration of the functional material within the microstructured material, so that a wide range of different metamaterials can be produced.



MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.